Canadian Journal of Forest Research

Contents
Volume 32, 2002

Revue canadienne de recherche forestière

Sommaire
Volume 32, 2002

January / janvier

ARTICLES

William R. Wykoff Measuring and modeling surface area of ponderosa pine needles 1

Kazuhiko Masaka and Hajime Sato Acorn production by Kashiwa oak in a coastal forest under fluctuating weather conditions 9

W.T. Rankin and Elliot J. Tramer Understory succession and the gap regeneration cycle in a *Tsuga canadensis* forest 16

Carlos F. Vargas, Alejandro López, Hermilo Sánchez, and Blanca Rodríguez Allozyme analysis of host selection by bark beetles in central Mexico 24

Kathy J. Lewis and B. Staffan Lindgren Relationship between spruce beetle and tomentosus root disease: two natural disturbance agents of spruce 31

Steven G. Newmaster and F. Wayne Bell The effects of silvicultural disturbances on cryptogam diversity in the boreal-mixedwood forest 38

Marilyn L. Cherry and Yousry A. El-Kassaby Growth, morphology, and cold hardiness of *Chamaecyparis nootkatensis* seedlings originating from an abbreviated reproductive cycle 52

Rebecca C. Jones, Dorothy A. Steane, Bradley M. Potts, and René E. Vaillancourt Microsatellite and morphological analysis of *Eucalyptus globulus* populations 59

Robert G. Lee and Penelope Jennings Eckert Establishment size and employment stability in logging and sawmilling: a comparative analysis 67

Johan Sonesson, Gunnar Jansson, and Gösta Eriksson Retrospective genetic testing of *Picea abies* under controlled temperature and moisture regimes 81

Steen Magnussen Evaluation of probability proportional to predictions estimators of total stem volume 92

J. Climent, M.R. Chambel, E. Pérez, L. Gil, and J. Pardos Relationship between heartwood radius and early radial growth, tree age, and climate in *Pinus canariensis* 103

Han Y.H. Chen, Pavel V. Krestov, and Karel Klinka Trembling aspen site index in relation to environmental measures of site quality at two spatial scales 112

Robert Jandl, Franz Starlinger, Michael Englisch, Edwin Herzberger, and Elisabeth Johann Long-term effects of a forest amelioration experiment 120

L.R. Schimleck, R. Evans, J. Ilic, and A.C. Matheson Estimation of wood stiffness of increment cores by near-infrared spectroscopy 129

Robin Rose and J. Scott Ketchum Interaction of vegetation control and fertilization on conifer species across the Pacific Northwest 136

Barbara E. Kishchuk, Gordon F. Weetman, Robert P. Brockley, and Cindy E. Prescott Fourteen-year growth response of young lodgepole pine to repeated fertilization 153

Zhong Li, Michael J. Apps, E. Banfield, and Werner A. Kurz Estimating net primary production of forests in the Canadian Prairie Provinces using an inventory-based carbon budget model 161

NOTES

C.A. Raymond and L.R. Schimleck Development of near infrared reflectance analysis calibrations for estimating genetic parameters for cellulose content in *Eucalyptus globulus* 170

K.E. Woeste Heartwood production in a 35-year-old black walnut progeny test 177

ERRATA

Daowei Zhang Erratum: Welfare impacts of the 1996 United States – Canada Softwood Lumber (trade) Agreement **182**

Scott M. Holub, Julie D.H. Spears, and Kate Lajtha Erratum: A reanalysis of nutrient dynamics in coniferous coarse woody debris **183**

Instructions to Authors **I-1**

Recommandations aux auteurs **R-1**

February / février

ARTICLES

Harri Mäkinen, Pekka Saranpää, and Sune Linder Wood-density variation of Norway spruce in relation to nutrient optimization and fibre dimensions **185**

Justin Podur, David L. Martell, and Keith Knight Statistical quality control analysis of forest fire activity in Canada **195**

Martin-Philippe Girardin, Jacques Tardif, and Yves Bergeron Dynamics of eastern larch stands and its relationships with larch sawfly outbreaks in the northern Clay Belt of Quebec **206**

Vidar Selås, Gianluca Piovesan, Jonathan M. Adams, and Mauro Bernabei Climatic factors controlling reproduction and growth of Norway spruce in southern Norway **217**

K.R. Brown and R. van den Driessche Growth and nutrition of hybrid poplars over 3 years after fertilization at planting **226**

Ronald Heninger, William Scott, Alex Dobkowski, Richard Miller, Harry Anderson, and Steve Duke Soil disturbance and 10-year growth response of coast Douglas-fir on nontilled and tilled skid trails in the Oregon Cascades **233**

Christine C. Muth and F.A. Bazzaz Tree canopy displacement at forest gap edges **247**

Daniel D. Kneeshaw, Harry Williams, Eero Nikinmaa, and Christian Messier Patterns of above- and below-ground response of understory conifer release 6 years after partial cutting **255**

Anne-Marie Collignon, Hervé Van de Sype, and Jean-Michel Favre Geographical variation in random amplified polymorphic DNA and quantitative traits in Norway spruce **266**

R.D. Whitney, R.L. Fleming, K. Zhou, and D.S. Mossa Relationship of root rot to black spruce windfall and mortality following strip clear-cutting **283**

S. Catovsky, N.M. Holbrook, and F.A. Bazzaz Coupling whole-tree transpiration and canopy photosynthesis in coniferous and broad-leaved tree species **295**

T.P. McDonald, E.A. Carter, and S.E. Taylor Using the global positioning system to map disturbance patterns of forest harvesting machinery **310**

Hua Chen, Mark E. Harmon, Jay Sexton, and Becky Fasth Fine-root decomposition and N dynamics in coniferous forests of the Pacific Northwest, U.S.A. **320**

Andrew N. Gray, Thomas A. Spies, and Mark J. Easter Microclimatic and soil moisture responses to gap formation in coastal Douglas-fir forests **332**

P.W. Clinton, R.B. Allen, and M.R. Davis Nitrogen storage and availability during stand development in a New Zealand *Nothofagus* forest **344**

K.J. Brown and R.J. Hebda Origin, development, and dynamics of coastal temperate conifer rainforests of southern Vancouver Island, Canada **353**

NOTE

Michael G. Shelton and Michael D. Cain Recovery of 1-year-old loblolly pine seedlings from simulated browse damage **373**

March / mars

ARTICLES

Michel Fortin and Yves Mauffette The suitability of leaves from different canopy layers for a generalist herbivore (Lepidoptera: Lasiocampidae) foraging on sugar maple **379**

G.A. O'Neill, S.N. Aitken, J.N. King, and R.I. Alfaro Geographic variation in resin canal defenses in seedlings from the Sitka spruce × white spruce introgression zone **390**

Ståle Størdal and Sjur Baardsen Estimating price taking behavior with mill-level data: the Norwegian sawlog market, 1974–1991 401

Michael G. Shelton and Michael D. Cain Potential carry-over of seeds from 11 common shrub and vine competitors of loblolly and shortleaf pines 412

David R. Woodruff, Barbara J. Bond, Gary A. Ritchie, and William Scott Effects of stand density on the growth of young Douglas-fir trees 420

Isabelle Simard, Hubert Morin, and Bruno Potelle A new paleoecological approach to reconstruct long-term history of spruce budworm outbreaks 428

Barbara L. Gartner, Eric M. North, G.R. Johnson, and Ryan Singleton Effects of live crown on vertical patterns of wood density and growth in Douglas-fir 439

Patricia E. Maloney and David M. Rizzo Pathogens and insects in a pristine forest ecosystem: the Sierra San Pedro Martir, Baja, Mexico 448

Yves Claveau, Christian Messier, Philip G. Comeau, and K. Dave Coates Growth and crown morphological responses of boreal conifer seedlings and saplings with contrasting shade tolerance to a gradient of light and height 458

Michael U. Stoehr and Craig H. Newton Evaluation of mating dynamics in a lodgepole pine seed orchard using chloroplast DNA markers 469

Lily Wang, Serge Payette, and Yves Bégin Relationships between anatomical and densitometric characteristics of black spruce and summer temperature at tree line in northern Quebec 477

Sinkyu Kang, Sungwoo Kim, and Dowon Lee Spatial and temporal patterns of solar radiation based on topography and air temperature 487

Seija Anttonen, Riikka Piispanen, Jari Ovaska, Pia Mutikainen, Pekka Saranpää, and Elina Vapaavuori Effects of defoliation on growth, biomass allocation, and wood properties of *Betula pendula* clones grown at different nutrient levels 498

Jörgen Wallerman, Steve Joyce, Coomaren P. Vencatasawmy, and Håkan Olsson Prediction of forest stem volume using kriging adapted to detected edges 509

W.D. Morewood, K.E. Hein, P.J. Katinic, and J.H. Borden An improved trap for large wood-boring insects, with special reference to *Monochamus scutellatus* (Coleoptera: Cerambycidae) 519

Jean-Martin Lussier, Hubert Morin et Réjean Gagnon Évolution de la structure diamétrale et production ligneuse des pessières noires issues de coupe et de feu 526

Jean-Martin Lussier, Hubert Morin, and Réjean Gagnon Mortality in black spruce stands of fire or clear-cut origin 539

Brian E. Potter and Jeffrey A. Andresen A finite-difference model of temperatures and heat flow within a tree stem 548

NOTES

Jennifer H. Myszewski, Lauren Fins, James A. Moore, Marc Rust, and Peter G. Mika Variation in the root bark phenolics/sugar ratio of Douglas-fir grown in two plantations in northern Idaho 556

Cynthia L. Broberg, John H. Borden, and Leland M. Humble Distribution and abundance of *Cryptorhynchus lapathi* on *Salix* spp. in British Columbia 561

April / avril

ARTICLES

Charles R. Warren and Mark A. Adams Possible causes of slow growth of nitrate-supplied *Pinus pinaster* 569

Christian Ammer and Sven Wagner Problems and options in modelling fine-root biomass of single mature Norway spruce trees at given points from stand data 581

Christopher R. Webster and Craig G. Lorimer Single-tree versus group selection in hemlock–hardwood forests: are smaller openings less productive? 591

Daniel Dumais, Carole Coursolle, Francine J. Bigras, and Hank A. Margolis Simulated root freezing in the nursery: effects on the growth and physiology of containerized boreal conifer seedlings after outplanting 605

Shashi Kant The marginal cost of structural diversity of mixed uneven-aged hard maple forests 616

Philip M. Wargo, Rakesh Minocha, Betty L. Wong, Robert P. Long, Stephen B. Horsley, and Thomas J. Hall Measuring changes in stress and vitality indicators in limed sugar maple on the Allegheny Plateau in north-central Pennsylvania 629

S. Meunier, J.-C. Ruel, G. Laflamme et A. Achim Résistance comparée de l'épinette blanche et du sapin baumier au renversement 642

Brian Harvey and Suzanne Brais Effects of mechanized careful logging on natural regeneration and vegetation competition in the southeastern Canadian boreal forest 653

Katherine J. Elliott, Lindsay R. Boring, and Wayne T. Swank Aboveground biomass and nutrient accumulation 20 years after clear-cutting a southern Appalachian watershed 667

Jos Beckers, Younes Alila, and Ahmed Mtiraoui On the validity of the British Columbia Forest Practices Code guidelines for stream culvert discharge design 684

Emil Cienciala, Per-Erik Mellander, Jiří Kučera, Magda Opluštilová, Mikaell Ottosson-Löfvenius, and Kevin Bishop The effect of a north-facing forest edge on tree water use in a boreal Scots pine stand 693

Dale R. Weigel and Chao-Ying Joanne Peng Predicting stump sprouting and competitive success of five oak species in southern Indiana 703

Michael D. Bock and Ken C.J. Van Rees Forest harvesting impacts on soil properties and vegetation communities in the Northwest Territories 713

Janet L. Ohmann and Matthew J. Gregory Predictive mapping of forest composition and structure with direct gradient analysis and nearest-neighbor imputation in coastal Oregon, U.S.A. 725

NOTES

Robert L. Edmonds and Georgia L.D. Murray Overstory litter inputs and nutrient returns in an old-growth temperate forest ecosystem, Olympic National Park, Washington 742

Christoph Kleinn, Berthold Traub, and Christian Hoffmann A note on the slope correction and the estimation of the length of line features 751

May / mai

The Role of Boreal Forests and Forestry in the Global Carbon Budget / Le rôle joué par les forêts boréales et la foresterie dans le cycle mondial du carbone

M.J. Apps, T. Karjalainen, B.J. Stocks, and C. Shaw Foreword / Préface v

John Yarie and Sharon Billings Carbon balance of the taiga forest within Alaska: present and future 757

Olga N. Krankina, Mark E. Harmon, Yuri A. Kukuev, Rudolf F. Treyfeld, Nikolai N. Kashpor, Vladimir G. Kresnov, Viktor M. Skudin, Nikolai A. Protasov, Mikhail Yatskov, Gody Spycher, and Ewgeni D. Povarov Coarse woody debris in forest regions of Russia 768

Bjarni D. Sigurdsson, Peter Roberntz, Michael Freeman, Marius Næss, Henrik Saxe, Halldor Thorgeirsson, and Sune Linder Impact studies on Nordic forests: effects of elevated CO_2 and fertilization on gas exchange 779

J.A. Trofymow, T.R. Moore, B. Titus, C. Prescott, I. Morrison, M. Siltanen, S. Smith, J. Fyles, R. Wein, C. Camiré, L. Duschene, L. Kozak, M. Kranabetter, and S. Visser Rates of litter decomposition over 6 years in Canadian forests: influence of litter quality and climate 789

J.S. Bhatti, M.J. Apps, and C. Tarnocai Estimates of soil organic carbon stocks in central Canada using three different approaches 805

A.G. Barr, T.J. Griffis, T.A. Black, X. Lee, R.M. Staebler, J.D. Fuentes, Z. Chen, and K. Morgenstern Comparing the carbon budgets of boreal and temperate deciduous forest stands 813

E.H. Hogg, James P. Brandt, and B. Kochtubajda Growth and dieback of aspen forests in northwestern Alberta, Canada, in relation to climate and insects 823

Wenjun Chen, Jing M. Chen, David T. Price, and Josef Cihlar Effects of stand age on net primary productivity of boreal black spruce forests in Ontario, Canada 833

Michael Fitzsimmons Estimated rates of deforestation in two boreal landscapes in central Saskatchewan, Canada 843

Thomas G. Pypker and Arthur L. Fredeen The growing season carbon balance of a sub-boreal clearcut 5 years after harvesting using two independent approaches to measure ecosystem CO_2 flux 852

Mark E. Harmon and Barbara Marks Effects of silvicultural practices on carbon stores in Douglas-fir – western hemlock forests in the Pacific Northwest, U.S.A.: results from a simulation model 863

M.A. Arain, T.A. Black, A.G. Barr, P.G. Jarvis, J.M. Massheder, D.L. Verseghy, and Z. Nesic Effects of seasonal and interannual climate variability on net ecosystem productivity of boreal deciduous and conifer forests 878

T.I. Little, D.J. Pluth, I.G.W. Corns, and D.W. Gilmore Post-fire forest floor development along toposequences of white spruce – trembling aspen mixedwood communities in west-central Alberta 892

Sylvie Tremblay, Rock Ouimet, and Daniel Houle Prediction of organic carbon content in upland forest soils of Quebec, Canada 903

June / juin

ARTICLES

James S. Rentch, Fekedulegn Desta, and Gary W. Miller Climate, canopy disturbance, and radial growth averaging in a second-growth mixed-oak forest in West Virginia, U.S.A. 915

Joseph J. Hendricks, Carlos A. Wilson, and Lindsay R. Boring Foliar litter position and decomposition in a fire-maintained longleaf pine – wiregrass ecosystem 928

F. Zamudio and R.D. Wolfinger Growth increments and stability over time in fast-growing forest tree species 942

Richard K. Kobe, Gene E. Likens, and Christopher Eagar Tree seedling growth and mortality responses to manipulations of calcium and aluminum in a northern hardwood forest 954

R. Meilan, K.-H. Han, C. Ma, S.P. DiFazio, J.A. Eaton, E.A. Hoien, B.J. Stanton, R.P. Crockett, M.L. Taylor, R.R. James, J.S. Skinner, L. Jouanin, G. Pilate, and S.H. Strauss The *CP4* transgene provides high levels of tolerance to Roundup® herbicide in field-grown hybrid poplars 967

Irene Hay, Marie-Josée Morency, and Armand Séguin Assessing the persistence of DNA in decomposing leaves of genetically modified poplar trees 977

S. Goto, F. Miyahara, and Y. Ide Monitoring male reproductive success in a Japanese black pine clonal seed orchard with RAPD markers 983

U. Nilsson, T.J. Albaugh, and H.L. Allen Development of size hierarchies prior to the onset of density-dependent mortality in irrigated and fertilized loblolly pine stands 989

X.L. Wang, K. Klinka, H.Y.H. Chen, and L. de Montigny Root structure of western hemlock and western redcedar in single- and mixed-species stands 997

R.B. Susfalk, W.X. Cheng, D.W. Johnson, R.F. Walker, P. Verburg, and S. Fu Lateral diffusion and atmospheric CO_2 mixing compromise estimates of rhizosphere respiration in a forest soil 1005

Sanjay Pyare and William S. Longland Interrelationships among northern flying squirrels, truffles, and microhabitat structure in Sierra Nevada old-growth habitat 1016

Ryan A. Atwood, Timothy L. White, and Dudley A. Huber Genetic parameters and gains for growth and wood properties in Florida source loblolly pine in the southeastern United States 1025

Linda E. Winter, Linda B. Brubaker, Jerry F. Franklin, Eric A. Miller, and Donald Q. DeWitt Initiation of an old-growth Douglas-fir stand in the Pacific Northwest: a reconstruction from tree-ring records 1039

Linda E. Winter, Linda B. Brubaker, Jerry F. Franklin, Eric A. Miller, and Donald Q. DeWitt Canopy disturbances over the five-century lifetime of an old-growth Douglas-fir stand in the Pacific Northwest 1057

Clive Welham, Brad Seely, and Hamish Kimmins The utility of the two-pass harvesting system: an analysis using the ecosystem simulation model FORECAST 1071

Catherine Boudreault, Yves Bergeron, Sylvie Gauthier, and Pierre Drapeau Bryophyte and lichen communities in mature to old-growth stands in eastern boreal forests of Canada 1080

Tonia DeBellis, Paul Widden, and Christian Messier Effects of selective cuts on the mycorrhizae of regenerating *Betula alleghaniensis* and *Acer saccharum* seedlings in two Quebec mixed deciduous forests 1094

NOTE

Bryce A. Richardson, Ned B. Klopfenstein, and Steven J. Brunsfeld Assessing Clark's nutcracker seed-caching flights using maternally inherited mitochondrial DNA of whitebark pine 1103

ERRATUM

David P. Kreutzweiser and Scott S. Capell Erratum: Fine sediment deposition in streams after selective forest harvesting without riparian buffers 1108

July / juillet

ARTICLES

Theresa B. Jain, Russell T. Graham, and Penelope Morgan Western white pine development in relation to biophysical characteristics across different spatial scales in the Coeur d'Alene River basin in northern Idaho, U.S.A. 1109

L.H. Pardo, H.F. Hemond, J.P. Montoya, T.J. Fahey, and T.G. Siccama Response of the natural abundance of ^{15}N in forest soils and foliage to high nitrate loss following clear-cutting 1126

Kirsten E. Haberkern, Barbara L. Illman, and Kenneth F. Raffa Bark beetles and fungal associates colonizing white spruce in the Great Lakes region 1137

R. Sutinen, A. Teirilä, M. Pänttäjä, and M.-L. Sutinen Survival of artificially regenerated Scots pine on till soils with respect to varying dielectric properties 1151

R. Sutinen, A. Teirilä, M. Pänttäjä, and M.-L. Sutinen Distribution and diversity of tree species with respect to soil electrical characteristics in Finnish Lapland 1158

David B. South and D.G.M. Donald Effect of nursery conditioning treatments and fall fertilization on survival and early growth of *Pinus taeda* seedlings in Alabama, U.S.A. 1171

F. Wayne Bell and Steven G. Newmaster The effects of silvicultural disturbances on the diversity of seed-producing plants in the boreal mixedwood forest 1180

M.P. Fernandez, C. Breuil, and P.A. Watson Natural clonal variation of wood extractives in *Populus tremuloides* 1192

R. Allen Curry, David A. Scruton, and Keith D. Clarke The thermal regimes of brook trout incubation habitats and evidence of changes during forestry operations 1200

Jennifer N. Bennett, Ben Andrew, and Cindy E. Prescott Vertical fine root distributions of western redcedar, western hemlock, and salal in old-growth cedar–hemlock forests on northern Vancouver Island 1208

M.J. Ducey, G.J. Jordan, J.H. Gove, and H.T. Valentine A practical modification of horizontal line sampling for snag and cavity tree inventory 1217

Margus Pensa and Arne Sellin Needle longevity of Scots pine in relation to foliar nitrogen content, specific leaf area, and shoot growth in different forest types 1225

Nathan J. Poage and John C. Tappeiner, II Long-term patterns of diameter and basal area growth of old-growth Douglas-fir trees in western Oregon 1232

Dean S. DeBell and Constance A. Harrington Density and rectangularity of planting influence 20-year growth and development of red alder 1244

Jean-Louis Martin and Christophe Baltzinger Interaction among deer browsing, hunting, and tree regeneration 1254

Stefan Zeglen Whitebark pine and white pine blister rust in British Columbia, Canada 1265

Kristina D. Rothley Use of multiobjective optimization models to examine behavioural trade-offs of white-tailed deer habitat use in forest harvesting experiments 1275

K. Miyanishi and E.A. Johnson Process and patterns of duff consumption in the mixedwood boreal forest 1285

DISCUSSION

Sylvain Parent and Hubert Morin Reply — Effects of adventitious roots on age determination in balsam fir regeneration 1296

August / août

ARTICLES

David Riaño, Emilio Chuvieco, Javier Salas, Alicia Palacios-Orueta, and Aitor Bastarrika Generation of fuel type maps from Landsat TM images and ancillary data in Mediterranean ecosystems 1301

Michael C. Wimberly Spatial simulation of historical landscape patterns in coastal forests of the Pacific Northwest 1316

David E. Calkin, Claire A. Montgomery, Nathan H. Schumaker, Stephen Polasky, Jeffrey L. Arthur, and Darek J. Nalle Developing a production possibility set of wildlife species persistence and timber harvest value 1329

N.P.P. Simon, F.E. Schwab, and R.D. Otto Songbird abundance in clear-cut and burned stands: a comparison of natural disturbance and forest management 1343

Paul G. Schaberg, Donald H. DeHayes, Gary J. Hawley, Paula F. Murakami, G. Richard Strimbeck, and Steven G. McNulty Effects of chronic N fertilization on foliar membranes, cold tolerance, and carbon storage in montane red spruce 1351

R.C. Godfree, R.O. Tinnin, and R.B. Forbes The effects of dwarf mistletoe, witches' brooms, stand structure, and site characteristics on the crown architecture of lodgepole pine in Oregon 1360

J.D. Mihail, J.N. Bruhn, T.R. Meyer, and F.W. Bell Pine needle rust effect on *Pinus banskiana* in response to interspecific plant competition and telial host density 1372

Michael D. Bock and Ken C.J. Van Rees Mechanical site preparation impacts on soil properties and vegetation communities in the Northwest Territories 1381

D.P. Gwaze, K.J. Harding, R.C. Purnell, and F.E. Bridgwater Optimum selection age for wood density in loblolly pine 1393

Hans W. Linderholm, Anders Moberg, and Håkan Grudd Peatland pines as climate indicators? A regional comparison of the climatic influence on Scots pine growth in Sweden 1400

Erika D. Anderson, John N. Owens, Anna M. Colangeli, and John H. Russell Challenges facing *Chamaecyparis nootkatensis* seed orchards: low seed production, pollen-cone abortion, self-pollination, and accelerated embryo development 1411

Mark A. Finney Fire growth using minimum travel time methods 1420

Melanie D. Jones, Shannon M. Hagerman, and M. Gillespie Ectomycorrhizal colonization and richness of previously colonized, containerized *Picea engelmannii* does not vary across clearcuts when planted in mechanically site-prepared mounds 1425

Heikki Nuorteva Increased boron concentrations of Scots pine foliage induced by green pruning 1434

B. Bond-Lamberty, C. Wang, and S.T. Gower Aboveground and belowground biomass and sapwood area allometric equations for six boreal tree species of northern Manitoba 1441

Mahadev Sharma, Harold E. Burkhart, and Ralph L. Amateis Spacing rectangularity effect on the growth of loblolly pine plantations 1451

Lee E. Benda, Paul Bigelow, and Thomas M. Worsley Recruitment of wood to streams in old-growth and second-growth redwood forests, northern California, U.S.A. 1460

Natalie Fantin et Hubert Morin Croissance juvénile comparée de deux générations successives de semis d'épinette noire issus de graines après feu en forêt boréale, Québec 1478

NOTES

Anurag A. Agrawal, Kevin R. Kosola, and Dylan Parry Gypsy moth defoliation and N fertilization affect hybrid poplar regeneration following coppicing 1491

Vernon S. Peters, S. Ellen Macdonald, and Mark R.T. Dale Aging discrepancies of white spruce affect the interpretation of static age structure in boreal mixedwoods 1496

September / septembre

ARTICLES

David W. Peterson, David L. Peterson, and Gregory J. Ettl Growth responses of subalpine fir to climatic variability in the Pacific Northwest 1503

Shawn F. Morrison, Graham J. Forbes, and Steven J. Young Browse occurrence, biomass, and use by white-tailed deer in a northern New Brunswick deer yard 1518

Katherine P. O'Neill, Eric S. Kasischke, and Daniel D. Richter Environmental controls on soil CO_2 flux following fire in black spruce, white spruce, and aspen stands of interior Alaska 1525

Mike G. Cruickshank Accuracy and precision of measuring cross-sectional area in stem disks of Douglas-fir infected by *Armillaria* root disease 1542

Matti Katila and Erkki Tomppo Stratification by ancillary data in multisource forest inventories employing *k*-nearest-neighbour estimation 1548

Gregory G. McGee and Robin W. Kimmerer Forest age and management effects on epiphytic bryophyte communities in Adirondack northern hardwood forests, New York, U.S.A. 1562

Erkki Lähde, Olavi Laiho, Yrjö Norokorpi, and Timo Saksa Development of Norway spruce dominated stands after single-tree selection and low thinning 1577

Sylvain Jutras, Jean Bégin et André P. Plamondon Impact du drainage forestier après coupe sur la croissance de l'épinette noire en forêt boréale 1585

Robert B. Wielgus, Pierre R. Vernier, and Tina Schivatcheva Grizzly bear use of open, closed, and restricted forestry roads 1597

I. Charron and D.F. Greene Post-wildfire seedbeds and tree establishment in the southern mixedwood boreal forest 1607

Lisa A. Schulte, David J. Mladenoff, and Erik V. Nordheim Quantitative classification of a historic northern Wisconsin (U.S.A.) landscape: mapping forests at regional scales 1616

Mark A. White, Terry N. Brown, and George E. Host Landscape analysis of risk factors for white pine blister rust in the Mixed Forest Province of Minnesota, U.S.A. 1639

André Ménard, Patrick Dubé, André Bouchard, and Danielle J. Marceau Release episodes at the periphery of gaps: a modeling assessment of gap impact extent 1651

Michael S. Greenwood, William H. Livingston, Michael E. Day, Shawn C. Kenaley, Alan S. White, and John C. Brissette Contrasting modes of survival by jack and pitch pine at a common range limit 1662

Kim H. Ludovici, Stanley J. Zarnoch, and Daniel D. Richter Modeling in-situ pine root decomposition using data from a 60-year chronosequence **1675**

Erin C. Fraser, Victor J. Lieffers, Simon M. Landhäusser, and Brent R. Frey Soil nutrition and temperature as drivers of root suckering in trembling aspen **1685**

RAPID COMMUNICATION / COMMUNICATION RAPIDE

Geraldine L. Tierney and Timothy J. Fahey Fine root turnover in a northern hardwood forest: a direct comparison of the radiocarbon and minirhizotron methods **1692**

ERRATUM

Shawn F. Morrison, Graham J. Forbes, and Steven J. Young Erratum: Browse occurrence, biomass, and use by white-tailed deer in a northern New Brunswick deer yard **1698**

October / octobre

ARTICLES

T.S. Anekonda, M.C. Lomas, W.T. Adams, K.L. Kavanagh, and S.N. Aitken Genetic variation in drought hardiness of coastal Douglas-fir seedlings from British Columbia **1701**

Ulf Sikström Effects of liming and fertilization (N, PK) on stem growth, crown transparency, and needle element concentrations of *Picea abies* stands in southwestern Sweden **1717**

Rodney E. Will, Gregory T. Munger, Yujia Zhang, and Bruce E. Borders Effects of annual fertilization and complete competition control on current annual increment, foliar development, and growth efficiency of different aged *Pinus taeda* stands **1728**

M. Barker, H. Van Miegroet, N.S. Nicholas, and I.F. Creed Variation in overstory nitrogen uptake in a small, high-elevation southern Appalachian spruce–fir watershed **1741**

Christine J. Small and Brian C. McCarthy Effects of simulated post-harvest light availability and soil compaction on deciduous forest herbs **1753**

Anne G. Rhoads, Steven P. Hamburg, Timothy J. Fahey, Thomas G. Siccama, Elizabeth N. Hane, John Battles, Charles Cogbill, Jesse Randall, and Geoff Wilson Effects of an intense ice storm on the structure of a northern hardwood forest **1763**

Sylvain Parent, Hubert Morin, and Christian Messier Missing growth rings at the trunk base in suppressed balsam fir saplings **1776**

Susan J. Hannon, Cynthia A. Paszkowski, Stan Boutin, Jordan DeGroot, S. Ellen Macdonald, Matt Wheatley, and Brian R. Eaton Abundance and species composition of amphibians, small mammals, and songbirds in riparian forest buffer strips of varying widths in the boreal mixedwood of Alberta **1784**

Ken Olaf Storaunet and Jørund Rolstad Time since death and fall of Norway spruce logs in old-growth and selectively cut boreal forest **1801**

Ryan D. Hangs, J. Diane Knight, and Ken C.J. Van Rees Interspecific competition for nitrogen between early successional species and planted white spruce and jack pine seedlings **1813**

A. Benowicz, S.C. Grossnickle, and Y.A. El-Kassaby Field assessment of Douglas-fir somatic and zygotic seedlings with respect to gas exchange, water relations, and frost hardiness **1822**

J. Herbauts, V. Penninckx, W. Gruber, and P. Meerts Radial variations in cation exchange capacity and base saturation rate in the wood of pedunculate oak and European beech **1829**

André Lacointe, J.G. Isebrands, and George E. Host A new way to account for the effect of source–sink spatial relationships in whole plant carbon allocation models **1838**

Perttu Anttila Nonparametric estimation of stand volume using spectral and spatial features of aerial photographs and old inventory data **1849**

Emma Watson and Brian H. Luckman The dendroclimatic signal in Douglas-fir and ponderosa pine tree-ring chronologies from the southern Canadian Cordillera **1858**

Aki Pitkänen, Pertti Huttunen, Högne Jungner, and Kimmo Tolonen A 10 000 year local forest fire history in a dry heath forest site in eastern Finland, reconstructed from charcoal layer records of a small mire **1875**

Jeff S. Hoyt and Susan J. Hannon Habitat associations of black-backed and three-toed woodpeckers in the boreal forest of Alberta **1881**

NOTE

Stan Vasiliauskas and Han Y.H. Chen How long do trees take to reach breast height after fire in northeastern Ontario? **1889**

November / novembre

Maria João Paulo, Alfred Stein, and Margarida Tomé A spatial statistical analysis of cork oak competition in two Portuguese silvopastoral systems 1893

Vindhya Amarasinghe and John E. Carlson The development of microsatellite DNA markers for genetic analysis in Douglas-fir 1904

Kalle Eerikäinen, Danaza Mabvurira, Ladislaus Nshubemuki, and Jussi Saramäki A calibrateable site index model for *Pinus kesiya* plantations in southeastern Africa 1916

E.H. Hogg, M. Hart, and V.J. Lieffers White tree rings formed in trembling aspen saplings following experimental defoliation 1929

Joseph A. Antos and Roberta Parish Dynamics of an old-growth, fire-initiated, subalpine forest in southern interior British Columbia: tree size, age, and spatial structure 1935

Roberta Parish and Joseph A. Antos Dynamics of an old-growth, fire-initiated, subalpine forest in southern interior British Columbia: tree-ring reconstruction of 2 year cycle spruce budworm outbreaks 1947

T.H. Jones, B.M. Potts, R.E. Vaillancourt, and N.W. Davies Genetic resistance of *Eucalyptus globulus* to autumn gum moth defoliation and the role of cuticular waxes 1961

David W. MacFarlane, Edwin J. Green, Andreas Brunner, and Harold E. Burkhart Predicting survival and growth rates for individual loblolly pine trees from light capture estimates 1970

Michael A. Battaglia, Pu Mou, Brian Palik, and Robert J. Mitchell The effect of spatially variable overstory on the understory light environment of an open-canopied longleaf pine forest 1984

Paul C. Van Deusen Comparison of some annual forest inventory estimators 1992

Daniel Lesieur, Sylvie Gauthier, and Yves Bergeron Fire frequency and vegetation dynamics for the south-central boreal forest of Quebec, Canada 1996

Jeanine M. Rhemtulla, Ronald J. Hall, Eric S. Higgs, and S. Ellen Macdonald Eighty years of change: vegetation in the montane ecoregion of Jasper National Park, Alberta, Canada 2010

Anna Wallstedt, Andrew Coughlan, Alison D. Munson, Marie-Charlotte Nilsson, and Hank A. Margolis Mechanisms of interaction between *Kalmia angustifolia* cover and *Picea mariana* seedlings 2022

Robert S. Seymour and Laura S. Kenefic Influence of age on growth efficiency of *Tsuga canadensis* and *Picea rubens* trees in mixed-species, multiaged northern conifer stands 2032

Douglas B. Ransome and Thomas P. Sullivan Short-term population dynamics of *Glaucomys sabrinus* and *Tamiasciurus douglasii* in commercially thinned and unthinned stands of coastal coniferous forest 2043

Quang V. Cao, Shiansong Li, and Marc E. McDill Developing a system of annual tree growth equations for the loblolly pine – shortleaf pine type in Louisiana 2051

Bryan A. Black, H. Thomas Foster, and Marc D. Abrams Combining environmentally dependent and independent analyses of witness tree data in east-central Alabama 2060

December / décembre

ARTICLES

Mireille Desponts, André Desrochers, Louis Bélanger et Jean Huot Structure de sapinières aménagées et anciennes du massif des Laurentides (Québec) et diversité des plantes invasculaires 2077

Shawn Fraver, Robert G. Wagner, and Michael Day Dynamics of coarse woody debris following gap harvesting in the Acadian forest of central Maine, U.S.A. 2094

Susy Svatek Ziegler Disturbance regimes of hemlock-dominated old-growth forests in northern New York, U.S.A. 2106

Milosh Ivkovich, Gene Namkoong, and Mathew Koshy Genetic variation in wood properties of interior spruce. I. Growth, latewood percentage, and wood density 2116

Milosh Ivkovich, Gene Namkoong, and Mathew Koshy Genetic variation in wood properties of interior spruce. II. Tracheid characteristics 2128

A.-M. Manninen, J. Utriainen, T. Holopainen, and P. Kainulainen Terpenoids in the wood of Scots pine and Norway spruce seedlings exposed to ozone at different nitrogen availability 2140

R.L. DeLong, Kathy J. Lewis, Suzanne W. Simard, and Susan Gibson Fluorescent pseudomonad population sizes baited from soils under pure birch, pure Douglas-fir, and mixed forest stands and their antagonism toward *Armillaria ostoyae* in vitro 2146

Yves Dubuc, Jean Dubuc, and Francine J. Bigras An inexpensive portable freezer for in situ freezing in the field 2160

J.L. Morissette, T.P. Cobb, R.M. Brigham, and P.C. James The response of boreal forest songbird communities to fire and post-fire harvesting **2169**

S. Rouvinen, T. Kuuluvainen, and L. Karjalainen Coarse woody debris in old *Pinus sylvestris* dominated forests along a geographic and human impact gradient in boreal Fennoscandia **2184**

Gregory W. Dutkowski, João Costa e Silva, Arthur R. Gilmour, and Gustavo A. Lopez Spatial analysis methods for forest genetic trials **2201**

Stephen H. Yamasaki, James W. Fyles, and Brian D. Titus Interactions among *Kalmia angustifolia*, soil characteristics, and the growth and nutrition of black spruce seedlings in two boreal Newfoundland plantations of contrasting fertility **2215**

NOTES

Glen N. Stevens, Robert H. Jones, and Robert J. Mitchell Rapid fine root disappearance in a pine woodland: a substantial carbon flux **2225**

Dan Binkley Ten-year decomposition in a loblolly pine forest **2231**

Daniel Mandallaz Optimal sampling schemes based on the anticipated variance with lack of fit **2236**

DISCUSSION

D.B. Lindenmayer, C. MacGregor, and P. Gibbons Comment — Economics of a nest-box program for the conservation of an endangered species: a re-appraisal **2244**

Note of Appreciation / Note de reconnaissance **iii**

Announcement / Communiqué **v**

Author Index for Volume 32 / Index des auteurs pour le volume 32 **AI-1**

Contents for Volume 32 / Sommaire pour le volume 32 **C-1**